ACKNOWLEDGEMENTS

The Canadian Institute for Health Information and the Canadian Patient Safety Institute have collaborated on a body of work to address gaps in measuring harm and to support patient safety improvement efforts in Canadian hospitals.

The Hospital Harm Improvement Resource was developed by the Canadian Patient Safety Institute to complement the Hospital Harm measure developed by the Canadian Institute for Health Information. It links measurement and improvement by providing resources that will support patient safety improvement efforts.
D23: Would Disruption

<table>
<thead>
<tr>
<th>Concept</th>
<th>Disruption of surgical wound during the same hospital stay or an obstetric wound during the delivery episode of care.</th>
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<td>T81.83*</td>
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*Applicable to DAD abstracts from fiscal year 2015-2016 onward.
OVERVIEW AND IMPLICATIONS

Wound healing is a critical outcome in surgery, and postoperative wound disruption is a serious complication. Surgical incisions are acute wounds that activate the healing process. The healing process has four identified stages, namely: coagulation, inflammation, proliferative phase/granulation tissue formation and the remodeling phase, in reality it is a complex, continuous process (Demidova-Rice et al., 2012). Surgical wound dehiscence (SWD) has been defined as the separation of the margins of a closed surgical incision that has been made in skin, with or without exposure or protrusion of underlying tissue, organs, or implants. Separation may occur at single or multiple regions, or involve the full length of the incision, and may affect some or all tissue layers. A dehisced incision may, or may not, display clinical signs and symptoms of infection (Ousey, 2018).

Despite improvements in contemporary preoperative care and suture materials, the rate of surgical wound disruption has not decreased in recent years (Sorensen et al., 2005). CIHI’s Hospital Harm Results reports the number of preventable, unintended harm due to wound disruption as ranged from 3,581 events in fiscal 2014, to 5,435 events in fiscal 2019 (CIHI, 2020). This may be attributable to the increasing incidence of risk factors within the patient population outweighing the benefits of technical achievements (Sorensen et al., 2005).

The causes of SWD can be categorized as: technical issues with the closure of the incision (e.g., unravelling of suture knots); mechanical stress (e.g., coughing can cause breakage of the sutures or rupture of the healing incision after suture or clip removal/reabsorption); and disrupted healing (e.g., due to comorbidities or treatments that hamper healing, or as a result of a surgical site infection [SSI]) (Ousey, 2018). However, overall SSI is the strongest predictor of wound disruption (Moghadamyeghaneh et al., 2015). Abdominal wound disruption typically occurs at 10 +/- 6.5 days (median eight days) after surgery (Kenig et al., 2014). Hospital stay is significantly longer for patients with wound disruption, with a median of 36 days, compared to 16 days in a control group (van Ramshorst et al., 2010).

The prevention and management of surgical wound complications is a growing area of concern for patients, healthcare professionals, and administrators alike. In these times of rationalization of healthcare dollars, it is important to ensure that patients receive appropriate screening and care, beginning at the pre-operative assessment and continuing through to post-operative care and monitoring in the community. Best practice recommendations when combined with evidence-informed interventions should help clinicians develop the skills and tools needed to identify those at risk for complications and develop plans in collaboration with their patients to ensure a best practice approach (Harris, 2017).

Risk Factors

Factors that could increase the risk of postoperative wound dehiscence (AHRQ-PSI 14, 2016, *Kamel & Khaled, 2014):
Wound Disruption

**Adult Patient related:**
- Anemia
- Hypoproteinemia
- Jaundice
- Male gender
- Overweight
- Increasing age
- Infection
- Episiotomy*
- Poor nutrition
- Diabetes
- Smoking
- Malignancy
- Chronic pulmonary disease
- Presence of prior scar or radiation at the incision site
- Non-compliance with postoperative instructions (such as early excessive exercise or lifting heavy objects)
- Increased pressure within the abdomen due to fluid accumulation (ascites); inflamed bowel; severe coughing, straining, or vomiting
- Long-term use of corticosteroid medications

**Procedure related:**
- Emergency surgery
- Types of surgery (clean vs. contaminated)
- Surgical error

Factors that could increase the risk of postoperative wound dehiscence in the pediatric population (AHRQ PDI 11, 2016):
- Wound infections
- Age <1 year
- Emergency surgery
- Mechanical ventilation
- Median or vertical incisions
- Malnutrition
GOAL

Reduce the incidence of wound disruption in surgical and obstetrical patients by assessing risk, implementing risk factor modifications prior to surgery, and instituting good wound care management.

IMPORTANCE TO PATIENTS AND FAMILIES

Wound complications are a burden for patients, their families, and the healthcare system (Butcher & White, 2014). Poor healing can result in wound disruption which not only affects the patient's quality of life, but may also delay adjuvant therapies, increase post-operative discomfort, delay return to activity, and increase costs as a result of re-intervention, longer hospitalization and readmission. Pain, particularly during dressing change remains a significant factor. Apart from the distress caused, pain can lead to feelings of anxiety, anger, and depression (Woo, 2010). Accurate pain assessment and understanding of the type of pain, helps with decisions about when and how to give analgesia and what information needs to be shared with the multidisciplinary team (Taylor, 2010). Several risk factors can be mitigated before, during and after the operative period, suggesting that the risk of developing wound disruption in vulnerable patients also can be reduced.

Patient Stories

Wound Awareness Week 2020 - Patient Story 1
Wounds Australia 2020

Regina's Story (video)
Here is a patient story about a 75-year-old lady named Regina from Tasmania.
https://www.youtube.com/watch?v=U8S3MJpUAYY

Wound Awareness Week 2020 - Patient Story 3
Wounds Australia 2020

David's Story (video)
David's from South Australia shares his experience of having diabetic ulcers.
https://www.youtube.com/watch?v=zC3M7qN_uTQ

Wounds Australia
17 July 2019

Daniela’s Story (video)
Daniela, a dental nurse, and mother from Victoria, was told she needed amputation after a wound developed so large that it exposed her Achilles tendon. Hear her story of overcoming this difficult situation. https://www.youtube.com/watch?v=E_tOg7laVDs
CLINICAL AND SYSTEM REVIEWS, INCIDENT ANALYSES

Given the broad range of potential causes of wound disruption, clinical and system reviews should be conducted to identify latent causes and determine appropriate recommendations.

Occurrences of harm are often complex with many contributing factors. Organizations need to:

1. Measure and monitor the types and frequency of these occurrences.
2. Use appropriate analytical methods to understand the contributing factors.
3. Identify and implement solutions or interventions that are designed to prevent recurrence and reduce risk of harm.
4. Have mechanisms in place to mitigate consequences of harm when it occurs.

To develop a more in-depth understanding of the care delivered to patients, chart audits, incident analyses and prospective analyses can be helpful in identifying quality improvement opportunities. Links to key resources for conducting chart audits and analysis methods are included in the Hospital Harm Improvement Resource.

If your review reveals that your cases of wound disruption are linked to specific processes or procedures, you may find these resources helpful:

- **Agency for Healthcare Research and Quality (AHRQ)** [www.ahrq.gov](http://www.ahrq.gov)

- **American Journal of Health-System Pharmacy** [https://academic.oup.com/ajhp](https://academic.oup.com/ajhp)

- **Bone Joint** [https://online.boneandjoint.org.uk/loi/bij](https://online.boneandjoint.org.uk/loi/bij)
HOSPITAL HARM IMPROVEMENT RESOURCE

Wound Disruption


- Canadian Journal of Infectious Diseases and Medical Microbiology https://www.hindawi.com/journals/cjidmm

- Canadian Patient Safety Institute (CPSI) www.patientsafetyinstitute.ca

- Centers for Disease Control and Prevention www.cdc.gov

- Diabetes Care

- Institute for Healthcare Improvement (IHI) www.ihi.org

- National Institute for Health and Care Excellence (NICE) www.nice.org.uk

- Society of Obstetricians and Gynaecologists of Canada www.sogc.org

- The Society for Healthcare Epidemiology of America (SHEA) https://www.shea-online.org/
MEASURES

Vital to quality improvement is measurement, and this applies specifically to implementation of interventions. The chosen measures will help to determine whether an impact is being made (primary outcome), whether the intervention is being carried out (process measures), and whether any unintended consequences ensue (balancing measures).

In selecting your measures, consider the following:

- Whenever possible, use measures you are already collecting for other programs.
- Evaluate your choice of measures in terms of the usefulness of the final results and the resources required to obtain them; try to maximize the former while minimizing the latter.
- Try to include both process and outcome measures in your measurement scheme.
- You may use different measures or modify the measures described below to make them more appropriate and/or useful to your particular setting. However, be aware that modifying measures may limit the comparability of your results to others.
Posting your measure results within your hospital is a great way to keep your teams motivated and aware of progress. Try to include measures that your team will find meaningful and exciting (IHI, 2012).

GLOBAL PATIENT SAFETY ALERTS

Global Patient Safety Alerts provides access and the opportunity to learn from other organizations about specific patient safety incidents including alerts, advisories, recommendations, and solutions for improving care and preventing incidents. Learning from the experience of other organizations can accelerate improvement.

Recommended search terms:

- Wound Disruption
- Wound separation*
- Wound opening*
- Wound rupture*
- Wound breakdown*
- Wound failure*
- Surgical site failure*
- Surgical Site Infection
- Post-operative wound dehiscence*
- Burst abdomen*
- Fascial dehiscence*
- Preoperative/Postoperative

*(Ousey, 2018)

SUCCESS STORIES

Wound Care Distance Consulting - HSO Health Standards Organization, 2009

St. Adolphe Personal Care Home, a rural long-term care home, takes photos of difficult to heal wounds and e-mails them to a consulting dermatologist in the city. With this visual aid, the home's physician receives a more meaningful consult and has been successful in healing advanced ulcers. The consulting dermatologist has endorsed this practice and encourages other rural homes to adopt it. https://healthstandards.org/leading-practice/wound-care-distance-consulting/

Pixalere Incision Module, HSO Health Standards Organization, 2010

Wound care is an ongoing, important issue with many home care clients. The efforts and resources provided by the home care staff using the Pixalere system, together with the support and consultation of RNs with specialized training in wound care management, have resulted in the Home Health program providing leading edge care. The ability to track a client's progress
HOSPITAL HARM IMPROVEMENT RESOURCE

Wound Disruption

through a series of digital photos along with a clinical narrative allows staff to make appropriate and timely changes to care plans, helping to ensure quality patient outcomes.

https://healthstandards.org/leading-practice/pixalere-incision-module/

Wounds Australia
Patient Story (18 Apr 2018)

Pharmacist describes his experience with a long-standing, chronic leg ulcer and eventually receiving a new approach to care that was successful.

https://www.youtube.com/watch?v=Y0nDdcLVHdA
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AHRQ PSI 14 - Selected Best Practices and Suggestions for Improvement PSI 14:
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http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4159378/


https://www.woundsinternational.com/download/resource/7394

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1357070/

https://www.wounds-uk.com/download/resource/1155
